Conceptualizing Semantic Social Network for Malaysian Educational Institutions

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Summary

The term semantic web is introduce in order to create a standardize 'shell of data' and it is led by World Wide Web Consortium (W3C) that aiming to promotes common (exploit similarity) formats for data on the World Wide Web. This project main aims was to convert current unstructured data into a web of data that can be easily manipulate. It was build on W3C's Resource Description Framework (RDF). This proposal was intend to develop a framework that can be used for social network development, to further enhance the capability of user matching and information sharing. According to the W3C, The Semantic Web provides a common framework that allows data to be shared and reused across application, enterprise, and community boundaries. The main purpose of the development of semantic web is driving the evolution of the current Web by enabling users to find, share, and combine information more easily, some say the web 3.0. As we know humans are more intelligent compare to computer. Human can devise while computer had to follow set of instruction computed for them. Machines cannot accomplish all of tasks without human direction because the data are designed to be read by people, not machines. The semantic web is a vision of information that can be readily interpreted by machines, so machines can perform more of the tedious work involved in finding, combining, and acting upon information on the web.

Keywords:
Semantic Web, social networks, educational institution, information sharing, and information management.

1. Introduction

The social network has become one of the important tools for daily life. Those apps such as Facebook and Twitter were used on daily basis as a tool or medium for communication, often with a cost of privacy infiltration. Exposing ones personal data and information could cause damaged to ones images, ranging from minor to major damages. Social network was design for entertainment purpose and to share data among colleagues and improve networking. In order to fulfill those information needs a good information management practices is necessary. It's

not easy to manage a large volume of information and filtering that information requires some tedious work. Furthermore it's difficult to control the manner of information sharing among the users. Some of the problem with information sharing over the Internet is:
   a. Lack of knowledge on computer security
   b. Lack of awareness in safeguarding personal data
   c. Credibility of information can be questioned
   d. Lack of control over information that can be shared on the network
   e. Lack of specialization on information sharing

Semantic Web refers to an effort to generalize or factoring words into a couple of similar meaning, thus providing more choice to the user. Social networks can connect and present people in through online based on collection of data about them, which are stored in user profiles. User profiles determine interact or accessing their profiles over the Internet. The main principle of social networking sites is the use of explicit representation of user information and relationships between users for content selection, recommendation and trust mechanism. There are many social network sites in the World Wide Web and it's expected that the new generation of social network will be focusing on semantic approach, as proposed by many organization. One of the popular social networks is Friendster. It was established in 2003 and its main objective is to introduce a ring of friends and maintain those relationships. Information privacy is protected as photos and profiles will be only available to members. Membership is free and used to be one of the best social sites in the world. Another example is LinkedIn. This site is founded on 2003 and it's exclusively for those professional seeking for professional networking and information sharing among community of interest. It's more focusing on developing ones credential, rather than focusing on the social aspect of social network.

Social network is merely a site that capable to link a community into information sharing and networking purposes. User profiles serves as a parameter to indicate type of relationship and trustworthiness of information used over the Internet. User can share data, pictures, videos and much more. Social sites are relatively free of

charge. Those web portals generate income through other marketing strategies especially in term of banners that can be seeing within the entire site. This marketing practice is cheaper compare to physical banner.

2. Literature Review

2.1 Social Network

Computer-savvy environment creates an undoubtedly increasing number of people which become more familiar to online environments and practiced in their range of possible used. Over the last few years, social networking has expanded as the latest platform people engaging in. basically, today's environments watching people are catching with social networking phenomenon. Social network has been one of the influential communication medium for people in replacing face-to-face communication. According to Garton, Haythornthwaite & Wellman, (1997), when a computer network connects people or organizations, it is a social network (Jones, c1999). A social network is a set of people (or organizations or other social entities) connected by a set of social relations, such as friendship, co-working or information exchange (Jones, c 1999). Wellman, (1996), defined social relations as relations among people who deem other network members to be important or relevant to them in some way (Lange, 2007). On the rapid rise of social networking, the SNSs (Social Networking Sites) embarks and it acts as web based services that allow individuals to construct a public or semi public profile within a bounded system, articulate a list of other users with whom they share a connection and view and traverse their list of connection and those made by others within the system (Boyd & Ellison, 2009). Donath & Boyd, (2004); Gross & Acquisti, (2005), stated that one way that social networks are articulated and negotiated on social network sites is through linking and viewing profiles (Lange, 2007). Social networking enables people to overcome the limitation of time to meet new people, friends and other users of online interaction tools. It becomes the most influential computer mediated communication tools for online users especially for teenagers, students and youth adults similarly. The expanded of social networking among online users purposely depends on the social networking tools itself either it is for the self interest, educational purposes or globally participated with some network friends. Through the rise of social networking sites beginning with SixDegrees.com in 1997, which allowed users to create profiles and list their friends (Boyd & Ellison, 2007) and continuing to more recent social networking sites including MySpace and Facebook created in 2004 (Ellison, Steinfield & Lampe, 2007) becoming the most influential

social networking tools to communicate with online users. The increasing numbers of online users over social networking had produced several online communities' sites and forum purposely for the information sharing and users engaging in digital interactions.

The increasing uses of online social networking systems has led to the increasing engagement of teenagers, youth and adults to interact digitally and reduce the time meeting in face–to-face interactions. Despite to this situation, there has been widespread interest in different forms of socially interaction either for socially engagement, educational purposes, entertainment matters and digitally be friend with other online social networking users. The popularity and growth of social networking, led its adaptation in higher education systems. Colleges and universities students have had a brand new way of staying in touch with their friends, classmates and staffs by using one of the social networking sites starting Friendster continuing with the used of MySpace and the most influential SNSs Facebook which encounter about millions people in this world using it regularly as a medium of communication and sharing ideas. The addictions to Facebook have lessened face-to-face interaction and it harnesses the SNSs tools to further engage students in academic life (Harris, 2008). Recent studies are even showing that professors are using social networking sites to assist in negotiating the teacher-student relationship (Harris, 2008) and despite from the increasing uses of social networking sites it actually offered online users the most flexible and user centeredness to communicate, sharing the ideas, interest and most important is sharing the moment of life. The integration of online technologies, within the education sector can be seen as one approach (Dawson, 2008) for addressing face-to-face classroom teaching and learning process and therefore it help to facilitate the implementation of collaborative learning activities between academic staff and the students. As Facebook, it acts as a tool that aids students in developing their identities and finding their fit within a college community and making connections on campus which help them feel that they belong may be an important factor in student retention and make social networking sites very appealing (Cain, 2008). For those who do not engage in social networking miss out on more than just communication (Livingstone & Brake, 2010) and Crook & Harrison, (2008); Ito et al (2008) stated that educators and advocates of new digital literacy's are confident that social networking encourages the development of transferable technical and social skills of value in formal and informal learning (Livingstone & Brake, 2010). Pertaining to social networking adaptation in higher education institutions, social networking needs to restructure social practices which suits within academic environments and not simply adapt the existed social networking. Higher education

institutions could utilize the concept of social networking and made it as the platform to reach the college or university students and made social networking as a place to build a better social relationship between college or university administrators with the students. By building interpersonal relationships among students, academicians and administrators has the potential to alter perceived power relationships by making faculty and personnel seem more accessible (Harris, 2008) and it ensures students of higher education institutions felt more comfortable and most important the flexibility with social networking tools to interacts with college and university administrators and academicians. This can be proved with the recent studies have shown that 30 percent of Facebook users and 32 percent of MySpace users are older than 45 (Harris, 2008) which referred to the college and university administrators and academicians. Growing influence of social networking demonstrates that the utilization of social networking can expand the interactions or even the communication outside the classroom or campus build better communication channels with students and may be valuable as a supplemental recruitment tool in higher education (Harris, 2008).

Social network supports online users by facilitating and mediating social interactions among online users within a network and it offers flexibility and comfort ability to them and it is possible to understand the social dynamics among the users who use the social networking systems. Although it is not feasible to fully adapt the social networking concept in higher education, social networking still one of the most influential communication tools used in today's technological environment. People who do not regularly participate in social networking may not understand why other online users involve in social networking either it is the social networking sites or even the tools offered by the platform. Higher education should adopt the social networking concept in reaching the important people within the field because users of online spaces allow individuals to present themselves and articulate the connections with other users.

Students used social networking to communicate with lecturers about course related topics, lecturers used it as a review to identify students performances educationally and socially engaged into it and college and university administrators used it to increase the interactions with their customers (students and parents) and intentionally involved as a part of college and university services. Academicians and college and university administrators need to consider how to meet the needs of students to support students learning process and social networking offered the more than just a thought. Social networking has the capability to deliver a platform for learning and acts as a center for students learning activities.
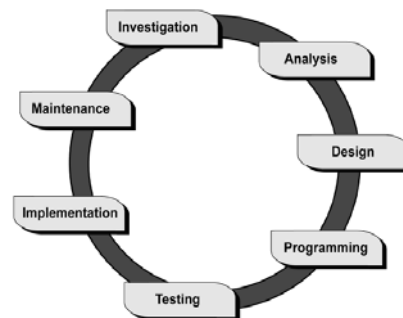
3. Methodology

Fig 1 System Development Life Cycle Methodology

Hoffer, George and Valacich (2006) stated that most organizations find it beneficial to use a standard set of steps called a systems development methodology to develop and support their information systems. Like many processes, the development of information systems often follows a life cycle. Systems Development Life Cycle (SDLC) or the Waterfall model was a common methodology for systems development in many organizations that used to develop maintain and replace the information systems as shown in Figure 1. System Development Life Cycle (SDLC) is a traditional system development method that is still used in organizations today. The main phases in the SDLC are investigation, analysis, design, programming, testing, implementation and maintenance

a. Investigation

An important task in this phase is early studies to identify whether the system that will be developed can fulfill user requirements. They will identify resource needs, cost involved, expected benefits and critical success factors.

b. Analysis

The analysis phase will only be carried out after agreement to develop a new system is achieved in the previous phase. In this phase, a study is conducted to understand the business problems that the organization plans to solve using an information system.

c. Design

The third phase of the SDLC in which the description of the recommended solution was converted into logical and then physical system specifications. There are two types of activities in design phase, which are logical system design and physical system design

d. Programming

The actual code for the information system is written by the programmer whereby they will

translate system design specification prepared by the system analysis into a programming code. This task may be carried out by more than one person depending on the complexity of the information system.

e. Testing

Testing phase is a process of identifying any mistakes that might occur during or after the implementation of the information system. Basically there are two types of error, which are syntax and logical error

f. Implementation

Implementation is the process of deploying the information system into action. There are few techniques that can be used, such as phase installation, direct installation, or parallel installation.

g. Maintenance

This new system that is in operation will be studied again after a certain period of time. This is to ensure that the user objectives are still being met.

4. Results and Findings

There are few issues identified from the feasibility analysis in which included:

a. Lack of standard in Semantic Web approach
b. Insufficient understanding over the advantages and features of semantic web
c. User acceptance test wasn't carried out to determine user readiness towards semantic web approach.

In order to check user acceptance a black box testing approach was used. Black-box testing tests the functionality of an application as opposed to its internal structures or workings. In this type of testing no specific knowledge of the application code and programming knowledge were required. The programmer only aware of what the software is supposed to do, but not how it does it. This method of test can be applied to all levels of software testing. Its importance to determine the complexness and durability of a semantic website. Furthermore there were three stages of tests have been performed by systems developers during analysis and design phases which included unit, integration and system tests. The following figure illustrated testing activities for Semantic Web:
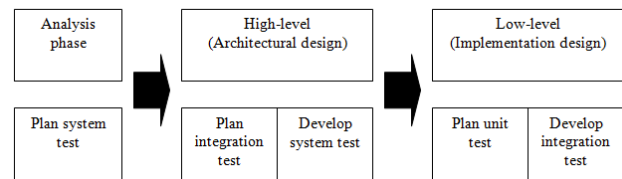

Fig 2 Testing Activities Performed During SDLC

5. Conclusions

The fast growth of information technology has certainly speeded up the process of information sharing. With the development of mobile technology has created a new environment called Web 2.0 in which users can share data or information anywhere at their own convenience. Semantic web are the future of the Internet and fast becoming the de-facto standard for general purpose. The advancement of information technology has certainly exposed personal data and information to various threat especially in term of identity theft thus a good mechanism must be adopted to prevent this threat from becoming a 'cancer' in IT industries. Various threats towards social experiences will become a nightmare to the user thus it could hinder the development of a secure Net environment.

Moreover the development of Semantic Web can become a medium of communication especially for education purposes. Semantic web allow sharing of information, notes, knowledge, current issues and much more, providing the learner with a limitless campus, a 24/7 campus and eliminate those geographical barrier, physical barrier and such on.

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